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Recent Parasitological Developments and Uses of Alternative Measures

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Introduction

Parasitology is the study of parasites and their hosts' interactions. In general, parasitologists study eukaryotic parasites like lice, mites, protozoa, and worms, while prokaryotic parasites and other infectious agents are studied in subjects like bacteriology, microbiology, and virology. Parasites are exceedingly prevalent and are responsible for a variety of severe diseases, including dysentery, diarrhoea, and malaria. The scope of parasitology as a biological study is governed not by the organism or environment in issue, but by their method of existence. This implies it draws on techniques from domains like cell biology, bioinformatics, biochemistry, molecular biology, immunology, genetics, evolution, and ecology to create a synthesis of other sciences. Parasitologists study parasites in all forms, including viruses, bacteria, worms, and insects. Parasites are creatures that take up residence in the bodies of other plants and animals. Given these challenges, Parasites are rapidly being recognised as serious pathogens with worldwide economic, environmental, and public health consequences.

Some of these eminent challenges and propose of new concepts that could open new avenues for research and discovery in this exciting field. New Technologies to Decipher Host:

Parasite interaction

Modern parasitology research is focused on determining the signal transduction pathways that govern parasite behaviour, survival, virulence, and gene expression, all of which are important elements in determining the outcome of the host-parasitic relationship. Identifying typical aberrancies in bio-molecular pathways and elucidating their relevance to the course and outcome of infection is a fundamental problem in comprehending cross-talk and communication between host and parasite. This problem can be solved by using unorthodox technologies and creative methodologies, such as "Omics technologies," the majority of which are already under development and can be used to investigate this complicated host–parasite relationship.

Zoonoses and emerging parasites

Many parasite illnesses are zoonotic, or passed from animals to people; parasitic diseases are a major global public health problem. In humans, parasitic zoonoses can produce a wide range of symptoms, from skin irritation caused by flea bites to death due to multi-organ failure, as seen in severe Lyme disease. Ingesting parasite-containing foods, such as meat (taeniasis, toxoplasmosis, trichinellosis), can cause parasite zoonoses (anisakiosis, clonorchiosis, diphyllobothriosis), Infection can also be contracted by skin contact with contaminated soil/water harbouring infective larvae, followed by skin penetration. The possibility for some zoonotic and to be employed as biowarfare weapons has further alarmed the public and policymakers. Despite the fact that some parasites have the potential to be employed as biodefense organisms, this field of study has yet to be recognized.

Exotics and wildlife parasitology

The management of parasitic infections in this complex environment will necessitate an increase in research and development funding as well as a multidisciplinary approach, given the projected effects of climate change and an increasingly globalised society in which parasites do not respect geographical borders or host–species barriers. With the availability of a variety of modern surveillance methods, enhanced bioinformatics/mathematical modelling, and global positioning systems, parasitologists are well positioned to handle this study topic.

The future occurrence of particular parasites in their hosts is linked to host features such as host food composition, geographic dispersion, environmental variables, and parasite-host specificity.

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